

Crushed Stone Quarry Fines Use for Structural Devices Production



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A photograph of two Canada geese in flight over a green field. The geese are shown in profile, flying from left to right. Their wings are spread wide, and their bodies are angled downwards. The background is a soft, out-of-focus green field.

ABSTRACT

- **Introduction**
- **The state of the art**
- **Brazilian Aggregate Scenario**
- **Uses of quarry fines**
- **Conclusions**

REFERENCES

1. Introduction

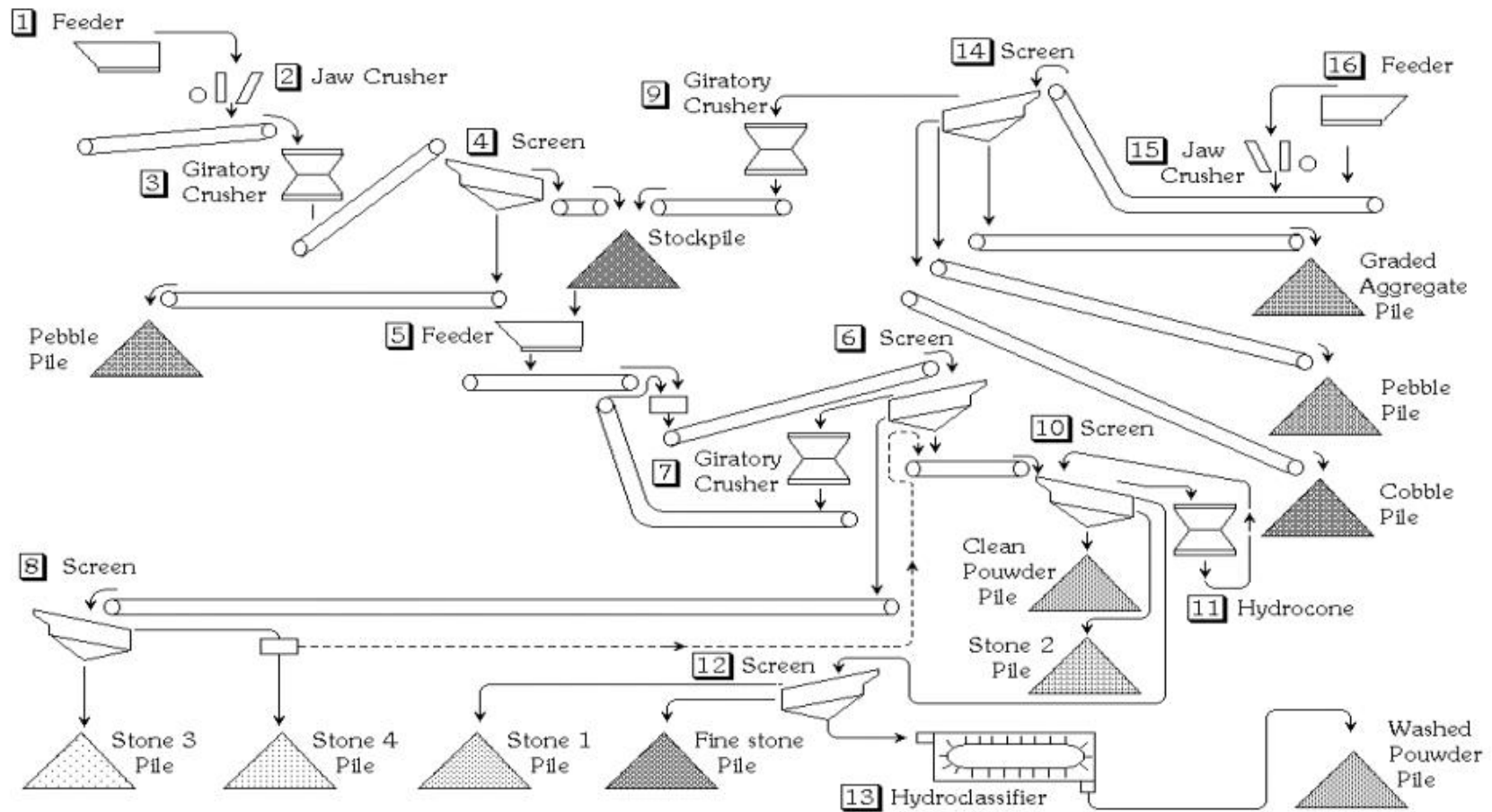


Figure 1 - Overview of a Typical Stone Quarry Crushing and Screening Plant.

2. The state of the art

- 
1. Istambul in Turkey (Fujimura et al., 1994)
 2. Portuguese (Fujimura et al., 1995)
 3. SWEMP 1996, at Cagliari in Italy (Fujimura et al., 1996)
 4. 1997, 3 papers deals with the equipment selection for quarry plants
 5. Mendes et al., MPES 2002, basalt fines
 6. SDIMI 2003 (Hennies & Almeida, 2003)
 7. MPES 2005, quarry fines for mortar (D'Agostino et al.).
 8. MPES 2006, Brazilian quarries (Hennies et al.).

3. Brazilian Aggregate Scenario

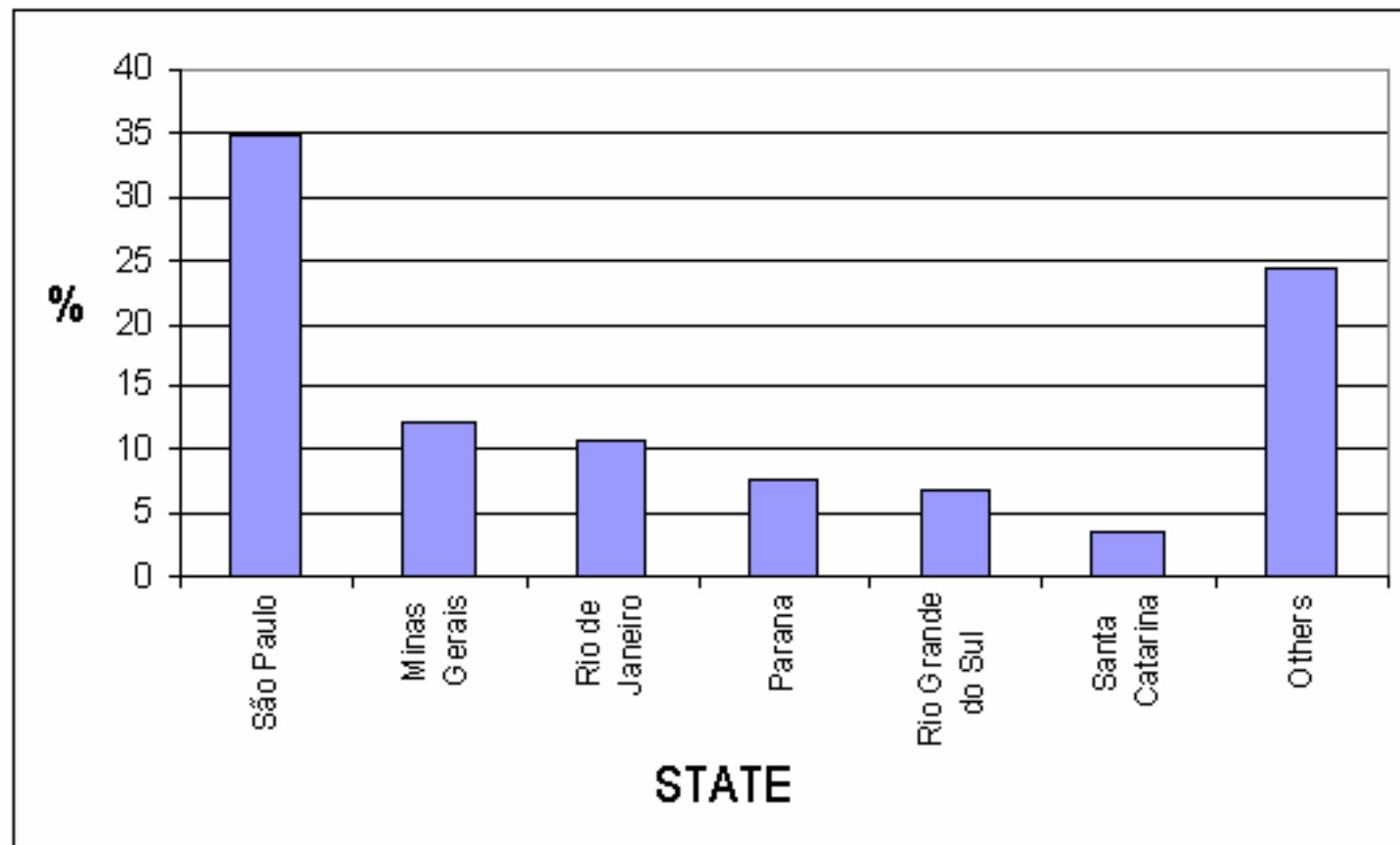
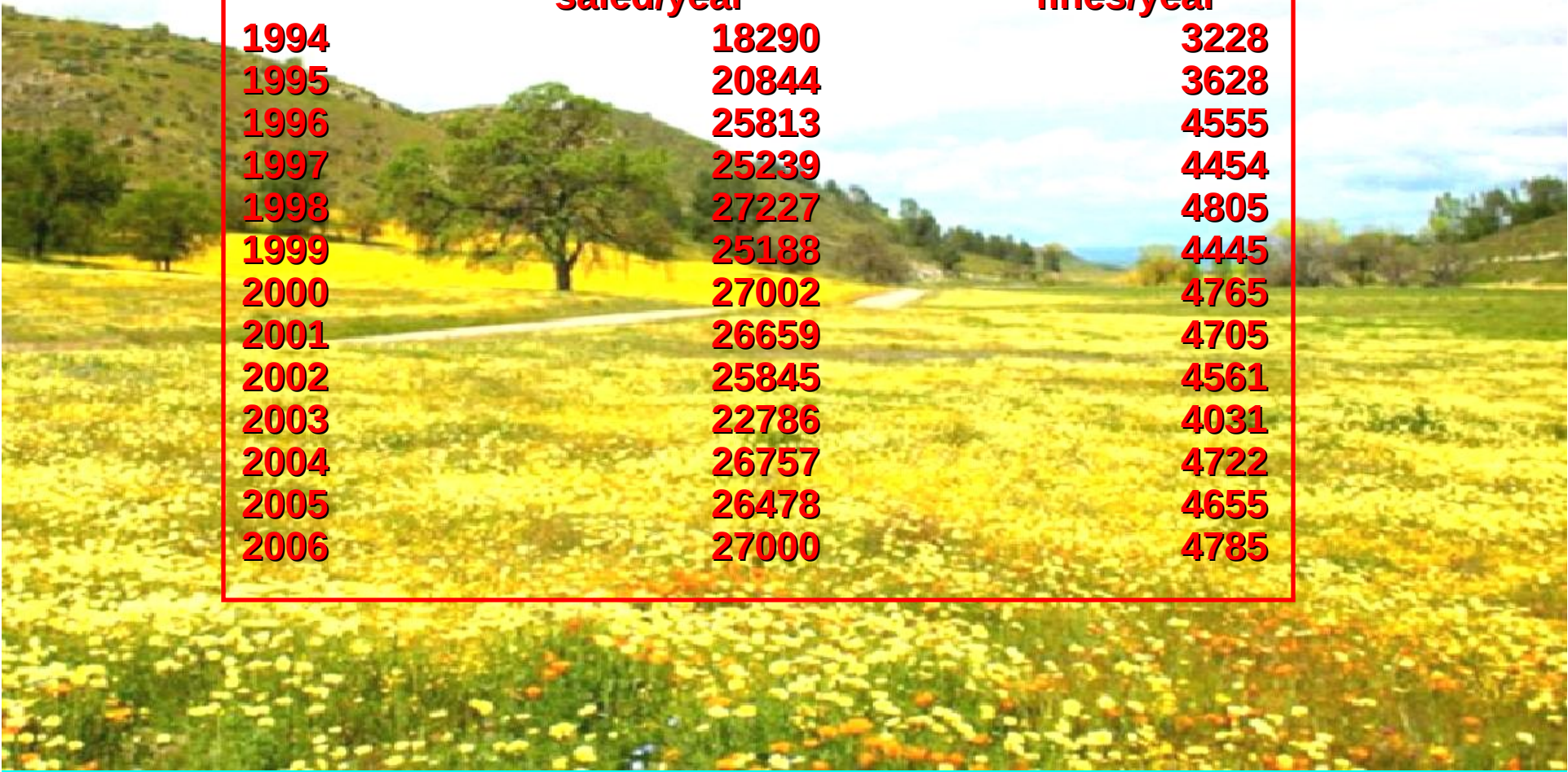


Figure 2 Aggregate production by States in Brazil in 2006



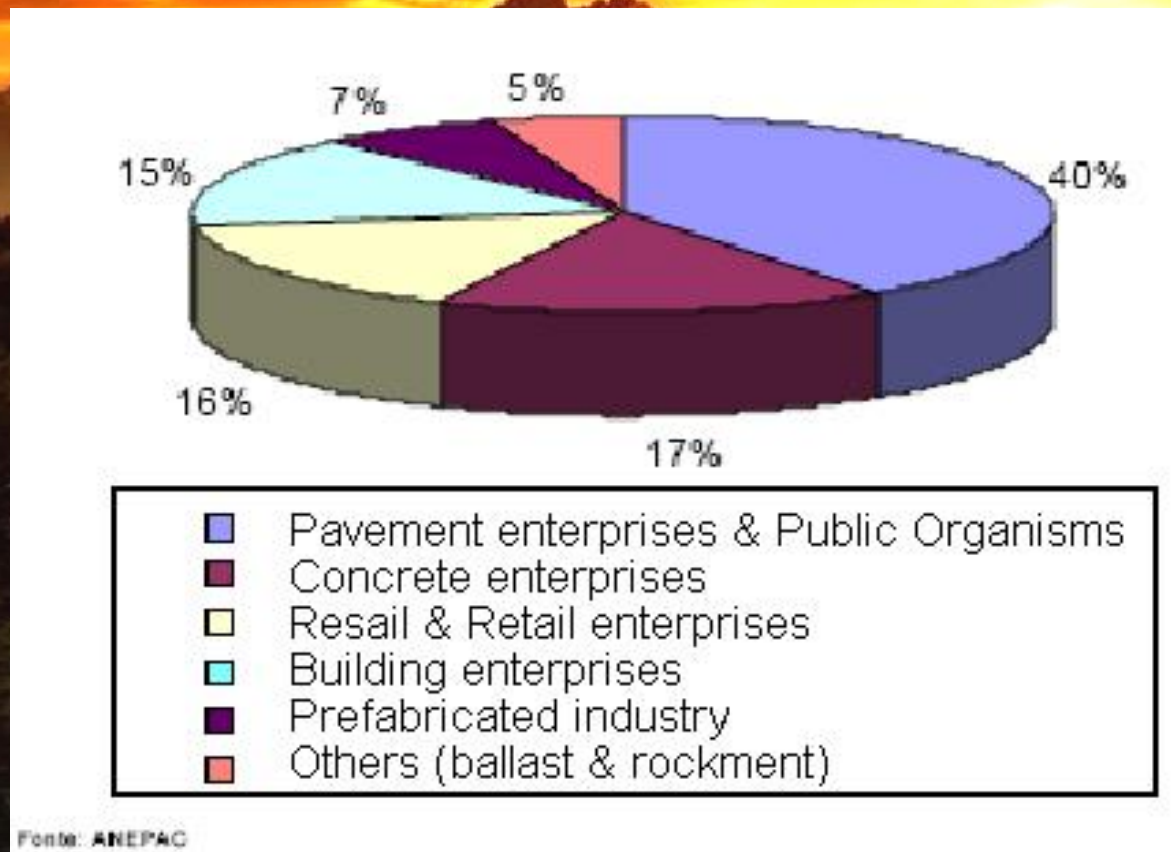
Quarry fines Storage Pile

Table 1. Crushed Stone & Fines Production



Year	Crushed stone saled/year	Crushed Stone fines/year
1994	18290	3228
1995	20844	3628
1996	25813	4555
1997	25239	4454
1998	27227	4805
1999	25188	4445
2000	27002	4765
2001	26659	4705
2002	25845	4561
2003	22786	4031
2004	26757	4722
2005	26478	4655
2006	27000	4785

Figure 4: Segmentation of quarry product in Brazil



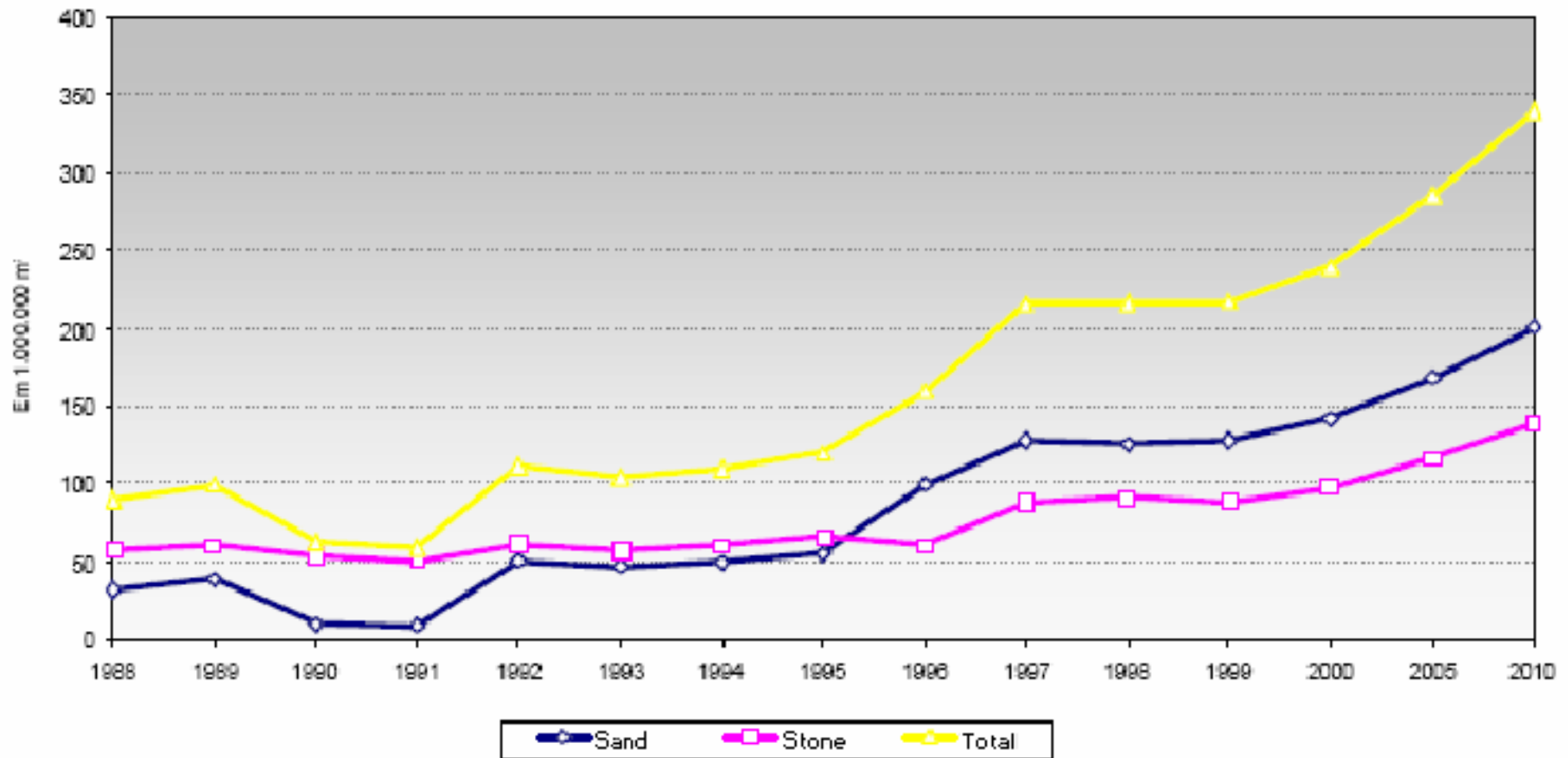
Alternative to produce artificial sand on the quarry

- A. Integral exploitation of the quarries without discarding the effluents;
- B. Obtaining sand with physical characteristics and chemical constants;
- C. Lesser cement consumption in the manufacture of structural devices; and;
- D. Solution of the environmental problems.

The Quarry commercial products

- (a) Stone 4 (70 – 50 mm)
- (b) Stone 3 (50 – 25 mm)
- (c) Stone 2 (25 – 12.5 mm)
- (d) Stone 1 (12.5 – 4.8 mm)
- (e) Stone Dust (<4.8 mm).

Brazilian consumption of aggregates sand, crushed stone and total 1988 until 2010



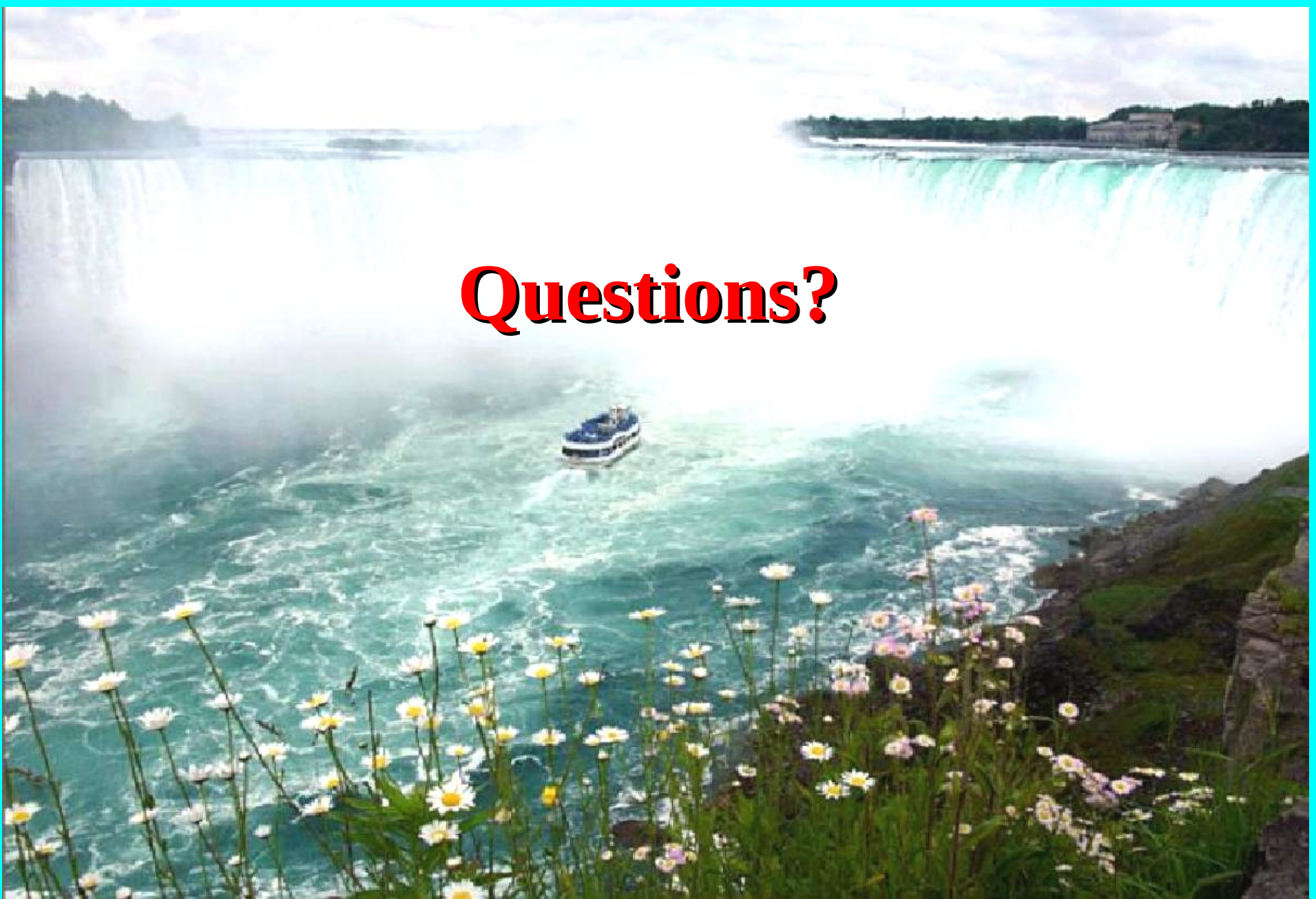
Conclusions

- The use of industrial residues, such as quarry fines represents a primordial component of the effort to serve as an indicator of auto-sustainable development.
- Therefore, there must be foreseen increasing investments in techniques of treatment and recycling of residues, in mining, as well as by-product attainment, that generates job and income.
- In a quarry, two are the found possible situations:
 - a) the effluent solids are discarded in piles, or,
 - b) the solids effluent are recycled and internally or externally giving it some use.
- This second practice, has translated additional economic consequence in an increase of income and greater environmental respect.

Acknowledgments



I thank You very much for Attention

A scenic view of Niagara Falls with a small boat in the turbulent water below. In the foreground, there are many white daisies growing on a rocky ledge. The word "Questions?" is written in large red letters with a black outline in the center of the image.

Questions?